

FOLIA TAXONOMICA 18. THE STATUS OF *PASSIFLORA CITRIFOLIA* AND A NEW SPECIES IN SUBGENUS *ASTROPHEA* (PASSIFLORACEAE), *PASSIFLORA JUSSIEUI*

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ABSTRACT

It is shown that *Passiflora citrifolia* (Juss.) Mast. is illegitimate and that the historical collections are inadequate to establish a species. *Passiflora jussieui* is described from the Guianas for the species to which the name is applied since Killip's revision in 1938.

RÉSUMÉ

On montre que *Passiflora citrifolia* (Juss.) Mast. est illégitime et que les collections anciennes sont inadéquates pour définir une espèce. *Passiflora jussieui* est décrite des Guyanes pour l'espèce ainsi nommée depuis la révision de Killip en 1938.

INTRODUCTION

**Nomenclatural history of *Passiflora citrifolia***

The nomenclature for *Passiflora citrifolia* (Juss.) Mast., a species of subgenus *Astrophea* (DC.) Mast., has evolved over the past 200 years. When Antoine Laurent de Jussieu (1805b, p. 392) described it in *Tacsonia* Juss. (1789), he said that if this species were accepted, one could name it *T. citrifolia*<sup>1</sup>. He did not accept that name, but merely proposed it for a future hypothetical naming whenever adequate material could be studied. Jussieu (1805b) said about the material (*herb. Richard*) he studied that it was impossible to establish a good species on such a specimen<sup>2</sup>. He stated that it was different from *P. glandulosa* Cav. and described *T. citrifolia* as follows. It has oval entire leaves smooth and coriaceous, 13.5 × 8 cm ("5 × 3 pouces") long, petioles 5.4 cm long with 2 glands at the apex, not at the base. The peduncle and therefore the bracts are missing. A detached flower has a tube nearly 4 cm long, a perianth divided in 10 oval lobes, a corona outer row made of filaments a few lineae long (1 linea = 2.255 mm) [misspelled as "ligues" for lignes], another inner row very small that seems to be made of glands. In the herbarium of the Museum d'Histoire naturelle in Paris (P), there is a specimen clearly belonging to this species for the leaves, but with only small flower buds, partly eaten by insects, in a pocket.

Augustin Pyrame de Candolle (1828, p. 335) validated the species by accepting it as *T. citrifolia* Juss., and the authorship should be given as Juss. ex DC. De Candolle placed *Tacsonia citrifolia* in *Tacsonia* section *Distephana* DC. close to *T. glandulosa* (Cav.) Juss. and added that the leaves were oval, coriaceous, entire, pinnately veined, and the petioles 2-glandular at apex "v. s. in h. Juss." (= I have seen a dried specimen in the Jussieu herbarium) without detail about the specimen. There is no material of *P. citrifolia* in the Jussieu herbarium at P. Most likely de Candolle referred to the same material seen by Jussieu in 1805, and the description by de Candolle is shorter but agrees with Jussieu's text.

Max Joseph Roemer (1846, p. 199) did not cite any specimen. He raised section *Distephana* to the rank of genus and kept in the species that were in de Candolle's section. For *D. citrifolia* (Juss. ex DC.) M. Roem., he merely cited Jussieu and de Candolle, but the different brackets of the key leading to it could be patched together into a description: leaves unlobed, entire, coriaceous, glabrous, acute(?), oval; petioles 2-glandular

<sup>1</sup>"Si elle étoit admise, on pourroit la nommer *T. citrifolia*."

<sup>2</sup>"Il est impossible d'établir sur un pareil individu une espèce solide."

at base; bracts 2-glandular at base, remote from the flowers. Contrary to the material studied by Jussieu, the petiolar glands are basal versus apical and the bracts had basal glands when they were missing in the specimen known to Jussieu, both points on which Jussieu (1805b) insisted. It strongly suggests that the description was based on material representing *P. glandulosa* Cav.—his *D. glandulosa* (Cav.) M. Roem.

Maxwell Tyndell Masters (1871: 629) transferred the name to *Passiflora* L., unaware of, or dismissing, *P. citrifolia* Salisb. (1796). Richard Anthony Salisbury's species is illegitimate because the original publication included *P. alata* Curtis 1788, a valid name, as a synonym (McNeill et al. 2006; ICBN art. 53.1). Nevertheless, *P. citrifolia* Salisb. (1796) has priority over *P. citrifolia* (Juss. ex DC.) Mast. (1871), which therefore is illegitimate as a later homonym (McNeill et al. 2006; ICBN art. 45.3). Later mentions of *P. citrifolia* do not refer to Salisbury's name. Masters placed *P. citrifolia* (illeg.) in subg. *Astrophea* in his unnamed section 1 described as: inflorescences cymose-paniculate, trees or shrubs often without tendrils. He cited "Sagot, 1287 &c." as a specimen.

Ellsworth Paine Killip (1938: 541) gave a good description of *P. citrifolia* and cited three specimens from G, K, and P, all mentioned for the first time and collected later than 1805. He added: "none of these specimens have good flowers," but added that his description of the corona was based on "Sagot in 1857 (K)". In Paris (P) there is two sheets clearly labeled *Sagot Oct. 1857* and in a thin folder there are two other Sagot specimens, both with the mention "Herbier du Dr Sagot" and saying that it had been given by his widow in 1888; only one labeled *Sagot N° 1287*. Those specimens belong to the same species as the *herb. Richard* collection. In Killip, the description of the leaves agrees with previous ones, except the one by Roemer. Killip's description is in conflict with Jussieu on the description of the flower with a shorter tube and a corona with 4–5 rows versus 2. There is doubt that the specimens Killip did study were of the same biological taxon as the specimens examined by Jussieu and de Candolle, but they represent the species currently known from the Guianas as *P. citrifolia*.

### **Different concepts of *Passiflora citrifolia***

The material seen by Jussieu was never cited clearly and had a flower in a bad condition according to Jussieu (1805b) himself. In 1828, and de Candolle (1828) accepted Jussieu's provisional name as a good species and probably saw the same specimen. The collection used for the description apparently not seen since de Candolle and the species designated by this name are not clear described the species currently called *P. citrifolia*.

Roemer (1846) studied different material and has a concept in conflict with Jussieu's description. He probably saw a small variation in what is now called *P. glandulosa* in subg. *Passiflora* supersect. *Distephana* (DC.) Feuillet & J.M. MacDougal.

Masters (1871) did not give a description for the species and transferred it to *Passiflora*. Nevertheless, through its placement in subg. *Astrophea* and the specimen cited, it is clear that the concept he had of the species is different from the description of Roemer, but in agreement with Jussieu and de Candolle. Killip (1938) described the flower from what is probably the same material and confirmed the placement in subg. *Astrophea*.

The identity of the taxon described by Jussieu and accepted by de Candolle is uncertain due to the poor quality of the potential type collection. A troubling fact is that Jussieu, de Candolle, and Roemer fail to mention a clear character of the species currently known as *P. citrifolia*—the leaves have a dark marginal band when dried, an uncommon character in *Passiflora*. The modern concept of *P. citrifolia* does not match Roemer's description. Furthermore, it is not certain that the modern concept matches Jussieu's comments either. For those reasons, it seems better to describe the well documented species as a new species rather than merely give it a new name.

Because the name *Passiflora citrifolia* (Juss. ex DC.) Mast. is a later homonym, a other name is needed. In the absence of synonym and in order to have for type a good blooming specimen, it seems better to describe the well documented species as a new species rather than merely give it a new name.

## TAXONOMIC TREATMENT

***Passiflora jussieui*** Feuillet, sp. nov. (**Fig. 1**). TYPE: FRENCH GUIANA: Piste de Saint-Élie, 1 km from road Cayenne – Saint-Laurent-du-Maroni (RN 1), 53°00'W, 5°22'N, 7 Sep 2001, fl. M.-F. Prévost & D. Barthélémy 4212 (HOLOTYPE US; ISOTYPE CAY).

? = *Tacsonia citrifolia* Juss. ex DC., Prodr. 3:335. 1828. Not *Distephana citrifolia* (Juss. ex DC.) M. Roem., Fam. Nat. Syn. 2:199. 1846.  
= *Passiflora citrifolia* (Juss. ex DC.) sensu Mast., Trans. Linn. Soc. 27:629. 1871; nom. illeg., non *P. citrifolia* Salisb. 1796.

Haec ad subgenere *Astrophea* sect. *Capreolatae* pertinens. Ad aliis speciebus, laminis foliorum cum margine subtus atrofasciato, floribus axillaribus solitarii vel in cauliflora inflorescentia aggregatis, perianthio albo, sepalis extra virellis violaceostriatis, coronae filamentibus 4–5-seriatis, extima serie explanata flava sed ad medium dense violaceomaculata, seriebus 2 et 3 erectis flavis violaceomaculatis, intima serie intime reflexa alba, fructibus angusto-fusiforibus 6-angularibus differt.

Scandent shrub when young, then liana, glabrous throughout except the ovary; trunk woody, up to 3 cm diam., young stems terete, striate; stipules narrowly linear, soon deciduous. Leaves alternate; petioles dark red, 1.5–4.5 cm long, adaxially 2-glandular at apex, the glands sessile, swollen, becoming saucer-shaped when dry, yellow, when in growth, the young petiole oblique upward and the blade oblique downward displaying the yellow glands as a crude egg mimic-structure; blades coriaceous, oblong or ovate-oblong, 12–20 × 5–12 cm, shortly acute and truncate or rounded at base, abruptly short-acuminate at apex, margin entire, when dry there is abaxially a conspicuous marginal band, slightly recurved, narrow, dark brown or blackish when dried, venation pinnate, main lateral veins 4–7(–9) each side of the midrib, strongly arcuate toward the margin, prominently reticulate, when fresh pale green becoming dark with age, paler green abaxially. Flowers solitary and axillary on young stems or in cauliflorous racemes with undeveloped leaves, racemes often short, 1–5 cm long, sometimes as long as 50 cm, peduncles 4–6 mm long, bracts scale-like, glandless, early deciduous. Flower tube cylindrical, 1.5–2 cm long, white to green, often heavily marked with brownish red; sepals 5, lingulate, about 3 × 1 cm, spreading and often recurved along the tube, outside colored like the tube, inside white; petals similar to the sepals in shape and habit, white; corona filaments in 4–5 series, the outermost subdolabriform, spreading, 18 mm long, yellow-green, heavily marked with dark red except at base and bright yellow apex, those of the next 2–3 series successively shorter, 1/3 to 1/6 as long, thick, oblique to erect, colored like the first row, the innermost 1–2 mm long, filiform, some slightly capitate, reflexed into the tube, white; operculum borne halfway up in the floral tube, slightly exerted, tubular, membranous at base, laciniate at apex, white, light purple at apex; androgynophore 3–3.6 cm long, white to green; stamens 5, filament flattened, fused at base 1–2 mm, free part 7 mm long, white, anther rectangular, 6–7 × 2 mm, pale yellow, pollen bright yellow; ovary narrow barrel-shaped, somewhat triangular in transverse section, 4–5 × 2–2.5 mm, strongly fluted when dry, densely short white- to green- or rufous-villous, 3-carpelled; styles 7–9 mm long, diameter increasing from base to apex, pale green, stigmas capitate, 3 mm diam., yellow. Fruit hanging, fusiform, hexagonal, seen only immature and green, glabrous; seeds not seen.

My above description agrees in most points with that given by Killip (1938, p. 541). Single axillary flowers and cauliflory have been observed on the same plants. Those racemes are actually short stems with bract-like leaves and either they continue normal vegetative growth, delayed or not, above the flowering segment, or they end their growth and become caducous after fruiting. The same type of stems with a basal inflorescence-like segment prolonged optionally by a normal leafy stem with axillary flowers is found toward the base of the main stem in unrelated *Passiflora* species like, to cite a few, *P. glandulosa* Cav. (subg. *Passiflora*), *P. coriacea* Juss. and *P. suberosa* L. (subg. *Decaloba* (DC.) Rchb.), or *P. balbis* Feuillet (subg. *Astrophea*).

*Distribution and ecology.*—*Passiflora jussieui* is known from French Guiana and Surinam in lowland rainforest. It has been collected in bloom in Jan, Mar–July, and Sep–Oct. June is the rainiest month and October the driest in French Guiana. It is likely that the species is not seasonal.

*Etymology.*—*Passiflora jussieui* has been named to honor Antoine Laurent de Jussieu (Juss.) who wrote some of the early important papers for the understanding of the Passifloraceae (1789, 1805a, 1805b).

*In cultivation.*—*Passiflora jussieui* is one of the easiest species to propagate in a notoriously difficult subgenus. It was cultivated in the Botanical Garden of ORSTOM in Cayenne. That single plant is documented by Cremers 6324 & 7156, Feuillet 1366, de Granville 5525 (all cited below) and was photographed several



FIG. 1. *Passiflora jussieui* Feuillet. A. Flower with recurved sepals and petals; B. Immature fruits; C. Inflorescence with undeveloped leaves and flower buds. A & C: photographed by the author in October 2003, at the Butterfly World *Passiflora* Collection, Florida; B: photographed by M.-F. Prévost (CAY) in December 1985, at the ORSTOM Botanical Garden (not extant), Cayenne, French Guiana.

times (including Fig. 1B). At the end of October 1991, Linda K. Albert de Escobar took cuttings from this plant. The cuttings were distributed among American research institutions. I brought cuttings from that same plant that bloomed outdoors in southern Florida (Butterfly World) on a large arbor, and I grew two plants in a greenhouse in Maryland where it bloomed every year. The plants grown from these cuttings have been documented (flowers in spirit collections *Feuillet GH-0048* & *GH-0120*, both at US) and photographed (including Fig. 1A & C).

PARATYPES: (specimens kept at the British National Collection of *Passiflora* are coded by NCP) **SURINAM:** mountains around Emmaketen, 19 Sep 1959, fl, A.G.H. Daniëls & F.P. Jonker 1227 (NY, U-now L) [apparently an error for F.P. Jonker & A.M.E. Jonker-Verhoef (cf. Ek 1991)]. **FRENCH GUIANA:** Briqueterie, Riv. Mana, Oct 1857, *P. Sagot* s.n. (K, P-2); Marouany, 1857, *P. Sagot* 1287 (K, P, P); Ile de Cayenne, L.C. Richard s.n. (P, type of *Tacsonia citrifolia* Juss. ex DC., nom. illeg.); 7.5 km SW of Kourou as "Kouron," 24 Mar 1977, fl, D. Roubik 72 (MO); Cayenne, 1821, *G. Perrottet* s.n. (G-DC, not cited by DC in 1828; photographs by Killip, 1925, F, US); Cayenne, 1850, *F. Leprieur* s.n. (P, P); Cayenne, 14 Jan 1980, fl, J.-J. de Granville 5525 (CAY-2); Jardin Botanique ORSTOM, Cayenne, origin probably the Approugue River Basin, 2 Jun 1980, fl, G. Cremers 6324 (CAY-2); idem, 23 Apr 1981, fl, G. Cremers 7156 (CAY, US); idem, 6 Apr 1984, fl, C. Feuillet 1366 (CAY); Mataroni River, 52°10.931'W, 4°13.306'N, 5 May 2001, fl, S.A. Mori et al. 25297 (CAY, NY, US); Rignon's farm, road to Cacao, 1 km from road Cayenne - Régina (RN 2), 52°25'W, 4°33'N, 28 Jul 2005, fl, M.-F. Prévost 4878 (CAY, US); Road Le Gallion - Tonate, near Montsinéry bridge, 11 Oct 1970, sterile, W. Benson s.n. (CAY); Route de St.-Élie, near Sinnamary, 19 Mar 2009, sterile, R.J.R. Vanderplank, C. Feuillet & M. Vecchia 1619/09 (CAY, K, NCP); Saut Coumarou, 30 m, 52°54'W, 4°42'N, 27 Oct 1992, fl, B. Bordenave 402 (CAY-2, P); Savane Renner, 18 Apr 1996, fl, G. Cremers & J.-J. de Granville 14457 (CAY).—**UK:** Cultivated in the UK, British National Collection of *Passiflora*, plants origin in French Guiana near Tonnegrande in 1999, Feb 2008, fl., R.J.R. Vanderplank 1395/08 (NCP) & 1521/08 (NCP).

In section *Capreolatae*, among the lianas with the foliar nectaries in adaxial position at the apex of the petiole, *P. jussieui* can be identified as follows:

1. Floral tube funnel-shaped \_\_\_\_\_ **P. cardonae** Killip
1. Floral tube campanulate to cylindrical.
  2. Leaf blades membranaceous \_\_\_\_\_ **P. skiantha** Huber
  2. Leaf blades coriaceous.
    3. Leaf blades with a marginal dark band; sepals 1–1.5 as long as the floral tube.
      4. Leaf blades with a marginal dark band 1 mm wide; pedicel 3–6 mm long.
        5. Corona in 3 series, the outermost filaments subdolabriform, 12–15 mm long, those of the two inner series narrow linear, 2–3 mm long \_\_\_\_\_ **P. cauliflora** Harms
        5. Corona in 4–5 series, the outermost filaments subdolabriform, 18 mm long, those of the 2–3 middle series thick, 3–6 mm long, the innermost narrowly linear, 1–2 mm long, recurved in the tube \_\_\_\_\_ **P. jussieui** Feuillet
      4. Leaf blades with a marginal dark band up to 0.5 mm wide; pedicel 4–9 mm long \_\_\_\_\_ **P. cerradensis** Sacco
    3. Leaf blades with or without a marginal dark band; sepals more than twice as long as the floral tube.
      6. Leaf blades 12–35 cm long with a narrow marginal dark band abaxially; flowers 5–6.5 cm long \_\_\_\_\_ **P. maguirei** Killip
      6. Leaf blades 4.5–12 cm long without a marginal dark band; flowers less than 4 cm long \_\_\_\_\_ **P. cardonae** Killip

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